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THE EFFECTS OF THOPPUKARANAM (SUPER BRAIN YOGA) ON STRESS MANAGEMENT AND PSYCHOLOGICAL HEALTH TO UNIVERSITY STUDENTS: AN 12-WEEK INTERVENTION STUDY

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ABSTRACT

Introduction: Effective coping mechanisms that are practical and economical for everyday life are required to handle the challenges that contemporary academic students experience. In clinical samples, Thoppukaranam has been shown to lower stress, but more research is needed to see whether regular Brain yoga lessons among functional Students produce the same effects.

Objectives: This study examined the effects of 12-week Thoppukaranam practice on stress and psychological wellness. In this study, we tested whether college students experienced these kinds of stress. Studies involving participants have examined important psychological factors including stress. After receiving stress management training for students. participants who were practise super brain yoga had improved mental function and experienced reduced stress.

Design / methodology / approach: sixty individuals participated moderate-to-high stress were randomly assigned to 12 consecutive weeks of Thoppukaranam practice. To achieve this purpose of the study, 60 Students were selected in the technique of stratified random sampling from SRM institute of science & technology Tamilnadu, India; their ages ranged from 19 to above years. another group is control group who did not practice Brain yoga. Stress and psychological health variables were assessed.

Results: Significant reductions in stress and all psychological health measures were found within the Thoppukaranam practice group over 12 weeks. When compared to the control group, Super brain yoga practitioners showed significant decreases in stress, anxiety, and general psychological health, and significant increases in well-being. The group who did not practice yoga showed not significant decreases in stress.

Conclusions: Super Brain yoga appears to be beneficial for stressed-out students and has the potential to support their psychological well-being.

Keywords: Super Brain Yoga, Stress, Psychological Variables, Perceived Stress Scale (PSS).

OS EFEITOS DO THOPPUKARANAM (SUPER BRAIN YOGA) NO CONTROLE DO ESTRESSE E NA SAÚDE PSICOLÓGICA DE ESTUDANTES UNIVERSITÁRIOS: UM ESTUDO DE INTERVENÇÃO DE 12 SEMANAS

RESUMO

Introdução: Mecanismos de enfrentamento eficazes, práticos e econômicos para a vida cotidiana são necessários para lidar com os desafios que os estudantes acadêmicos contemporâneos enfrentam. Em amostras clínicas, foi demonstrado que o Thoppukaranam reduz o estresse, mas são necessárias mais pesquisas para verificar se aulas regulares de ioga cerebral entre estudantes funcionais produzem os mesmos efeitos.

Objetivos: Este estudo examinou os efeitos da prática de Thoppukaranam de 12 semanas no estresse e no bem-estar psicológico. Neste estudo, testamos se estudantes universitários vivenciavam esse tipo de estresse. Estudos envolvendo participantes examinaram fatores psicológicos importantes, incluindo o estresse. Depois de receber

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treinamento de gerenciamento de estresse para alunos. os participantes que praticavam ioga super cerebral melhoraram a função mental e experimentaram redução do estresse.

Desenho/metodologia/abordagem: sessenta indivíduos participaram de estresse moderado a alto e foram aleatoriamente designados para 12 semanas consecutivas de prática de Thoppukaranam. Para atingir este objetivo do estudo, 60 alunos foram selecionados na técnica de amostragem aleatória estratificada do instituto de ciência e tecnologia SRM Tamilnadu, Índia; suas idades variavam de 19 anos a mais. outro grupo é o grupo de controle que não praticava ioga cerebral. Foram avaliadas variáveis de estresse e saúde psicológica.

Resultados: Reduções significativas no estresse e em todas as medidas de saúde psicológica foram encontradas no grupo de prática de Thoppukaranam durante 12 semanas. Quando comparados ao grupo de controle, os praticantes de Super Brain Yoga mostraram reduções significativas no estresse, na ansiedade e na saúde psicológica geral, e aumentos significativos no bem-estar. O grupo que não praticou yoga não apresentou reduções significativas no estresse.

Conclusões: O Super Brain Yoga parece ser benéfico para estudantes estressados e tem o potencial de apoiar seu bem-estar psicológico.

Palavras-chave: Super Brain Yoga, Estresse, Variáveis Psicológicas, Escala de Estresse Percebido (PSS).

LOS EFECTOS DEL THOPPUKARANAM (SÚPER YOGA CEREBRAL) SOBRE EL MANEJO DEL ESTRÉS Y LA SALUD PSICOLÓGICA DE LOS ESTUDIANTES UNIVERSITARIOS: UN ESTUDIO DE INTERVENCIÓN DE 12 SEMANAS

RESUMEN

Introducción: Se requieren mecanismos de afrontamiento eficaces que sean prácticos y económicos para la vida cotidiana para afrontar los desafíos que experimentan los estudiantes académicos contemporáneos. En muestras clínicas, se ha demostrado que Thoppukaranam reduce el estrés, pero se necesita más investigación para ver si las lecciones regulares de Brain yoga entre estudiantes funcionales producen los mismos efectos.

Objetivos: Este estudio examinó los efectos de la práctica de Thoppukaranam de 12 semanas sobre el estrés y el bienestar psicológico. En este estudio, probamos si los estudiantes universitarios experimentaban este tipo de estrés. Los estudios con participantes han examinado importantes factores psicológicos, incluido el estrés. Después de recibir capacitación en manejo del estrés para estudiantes. Los participantes que practicaron súper yoga cerebral mejoraron su función mental y experimentaron una reducción del estrés.

Diseño/metodología/enfoque: participaron sesenta personas con estrés moderado a alto que fueron asignadas aleatoriamente a 12 semanas consecutivas de práctica de Thoppukaranam. Para lograr este propósito del estudio, se seleccionaron 60 estudiantes mediante la técnica de muestreo aleatorio estratificado del Instituto de Ciencia y Tecnología SRM de Tamilnadu, India; sus edades oscilaban entre los 19 y más años. otro grupo es el grupo de control que no practicó Brain yoga. Se evaluaron variables de estrés y salud psicológica.

Resultados: Se encontraron reducciones significativas en el estrés y en todas las medidas de salud psicológica dentro del grupo de práctica de Thoppukaranam durante 12 semanas. En comparación con el grupo de control, los practicantes de Super Brain Yoga mostraron reducciones significativas en el estrés, la ansiedad y la salud psicológica general, y aumentos significativos en el bienestar. El grupo que no practicó yoga no mostró disminuciones significativas del estrés.

Conclusiones: El Super Brain yoga parece ser beneficioso para los estudiantes estresados y tiene el potencial de apoyar su bienestar psicológico.

Palabras clave: Super Brain Yoga, Estrés, Variables Psicológicas, Escala de Estrés Percibido (PSS).

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1 INTRODCTION

1.1 HISTORY OF THOPPUKARANAM

The Super brain yoga known as Thoppukaranam has its roots in India. Indian ancestors used to do this as a routine part of their daily lives in the past. It improves memory and blood circulation[1]. Moreover, it activates our brain. The Tamil word "Thoppu Karanam" called in Sanskrit words "Dhorbi" and "Karanam," which respectively indicate together "two hands" and "two ears". Legend has it that Lord Vishnu performed the "Thoppu Karanam" in front of Lord Ganapathi in order to reclaim his "Sudarshan Chakra" that had been taken by Lord Ganapathi. The Thoppu Karanam ritual was then put into practise. During the worship of Lord Ganesha, this ritual is carried out by sitting up and down while keeping the hands crosswise over the chest with the fingers clutching both the earlobes[2]. In Tamil, "Thoppu Karanam" means "to hold both ears." This custom has long been followed in India, where it is carried out in front of a representation of Lord Ganapati. Lord Shiva and Goddess Parvathi have a son named Lord Ganapati. He is a representation of wisdom and intelligence. "Ga" stands for intelligence, "Na" for wisdom, and "Pathy" is the word for master. The title "Ganapati" implies the Master of Wisdom and Intelligence in its entirety. The "Thoppu Karanam" practise is thought to enhance wisdom and intelligence. The Gurus advise their students to practise this technique to awaken and energise the brain cells, and this practise was common in the historic Gurukula System of education. current days This method is known as super brain yoga in the Western country[3-4].

1.2 SCIENTIFIC APPROACH THEORY OF THOPPUKARANAM

Thoppukaranam, stimulates the pituitary and pineal glands by boosting pressure in the ear lobes. The key advantages of Thoppukaranam are that it is a quick, easy method for maintaining a healthy brain. By using these strategies, the students can synchronise alpha brain waves to stimulate and energise the brain, reduce psychological stress, and promote psychological stability, brain health, intelligence, and creativity. Thoppukaranam's steps are all supported by scientific theory. Thoppukaranam stimulates the right and left brains, which stimulates the Varma vital points sites at the right and left ears. A 10-minute session of Thoppukaraanam boosts cognitive function[4]. Based on the Siddha theory of varma important spots placed of ears and the study of prana/energy movement through various chakras, the great Indian Rishis created this technique to boost human intelligence. The normal operation of

human metabolic processes is ensured by the way that the chakras absorb, digest, and distribute prana to the various areas of the body. Thoppukaranam moves blocked energy from the root and basic chakras up into the crown chakra, which regulates the pineal gland and overall brain function, through the primary energy centres. It is clairvoyantly observed that one's energy centres and aura are larger after practising Thoppukaranam[5-16].

1.3 HOLISTIC APPROACH THEORY OF THOPPUKARANAM

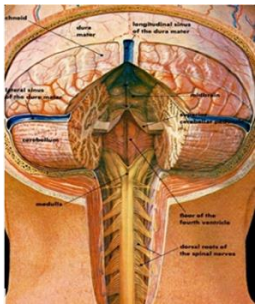
Figure 1

Holistic Approach Theory of Thoppukaranam - Ganapathy

Source: Prepared by Authors (2024)

Figure 2

Holistic Approach Theory of Thoppukaranam - Human Brain


dura mater
longitudinal sinus of the dura mater
medulla
floor of the fourth ventricle
dorsal roots of the spinal nerves

Source: Prepared by Authors (2024)

Figure 1 show that Lord Ganapathy is the very definition of wisdom, and elephants are extremely wise animals. A human brain has the appearance of an elephant's head in either half if it is sliced in half sagittal. We are able to observe the brain wave pattern, and it's endless . Figure 1 & 2 Show that The eyes, earlobes, trunks, extended nose, and even the line in the centre of Lord Ganapathy’s nose are all strongly visible in the brain images. A striking correlation between Ganapathy and the pons, medulla, and cerebellum can be seen in the ventral view of the human brain, which is the brain as seen from above. The medulla and pons of

lord Ganapathy correlate to his trunk, and the face to his pons. Ganapathy's eyes are represented by the roots of the trigeminal nerve, and his tusks by a group of nerves in the pons. The cerebellum is a component of the ears[17-21].

1.4 TECHNIQUES OF SUPER BRAIN YOGA

Super brain yoga is described as an easy practise with 11 steps. 1. Take off any ornamentation and face east. 2. Fold the tongues inward and gently tap them on the palate of the mouth.3. Extend our left arm out in front of ourself. 4. To get to the right earlobe, bend at the elbow.5. With our left hand, hold the right earlobe with our thumb on the outside and two fingers on the inside, behind the ear.6. Raise our right arm. Reach for the left earlobe while folding at the elbow. The right arm will pass in front of the left.8. Place our thumb and fingers in the precise same position as you did for our right earlobe. 9. Take a full, nasal breath. 10. Extending the arms as above, similarly squat slightly to a position of sitting. 11. Gently exhale while rising to a standing position. For a 12 weeks, execute the exercise 3 sets times in a ten minute (60 times) every morning (except on weekends) to help students focus and remember things better[22].

2 MATERIALS AND METHODS

Data from the study sample's pre- and post-tests in one experimental group and one control group were analysed for psychological influences. Sixty students from who attend the SRM Institute of Science & Technology Tamil Nadu, aged 19 and older, were chosen for this study. The participant acceptance form and institutional permission statement accepted the procedures used in this study that engaged participants ethically as routine. The participants were divided into two groups, each consisting of 30 students. the experimental group 1 received Brain yoga for Thoppukaranam and brain yoga. While The control group 2 did not practise.

2.1 PERCEIVED STRESS SCALE (PSS-10)

The PSS is a 10-item questionnaire used for evaluating an individual's degree of stress. Each item is scored from 0 (never) to 4 (almost always), with a range of 0 to 40 potential results. A higher score denotes a greater degree of perceived stress. Each thing is given a grade on a scale of zero to 4, Positively phrased items are reverse-scored, the ratings are summed, and

larger scores indicate perceived levels of stress. In order to calculate the PSS10 scores, the scores on the four positive items are reversed (e.g., 0=4, 1=3, 2=2, etc.), and the results are then added across all ten items. Individually, the favourably expressed items are 4, 5, 7, and 81[23-25].

2.2 DATA COLLECTION

Participants with who matched the selection criteria were included in the trial, whether or not they experienced education pressure. They needed to be older than 19, at least. The participants' psychological makeup, their perception of the advantages of using brain yoga as a form of treatment after being diagnosed, their using Thoppukaranam practises, the resources considered, the safety, and the effectiveness of yoga therapy were all explored by the questionnaire. Standard forms that had already been produced and authorised by the researcher were given to participants. Along with the individuals' data, histories, diagnoses, and other details were logged.

3 RESULTS

3.1 STATISTICS CALCULATIONS

SPSS 19.0 was used to conduct the study's statistical analysis. The results were described using percentages, averages, and standard deviations. Since its beginnings as a statistical analysis tool, SPSS has developed into a popular among academics for a variety of features[26-28].

3.2 INTERPRETATION OF RESULT

If t cal < t tab Value, Accept Ho there is no relationship between Thoppukaranam practice (Group 1) to Psychological Stress variables. If t cal > t tab Value, Rejected Ho there is relationship between Thoppukaranam practice (Group 1) to Psychological Stress variables. If t cal < t tab Value, Accept Ho there is no relationship between without Thoppukaranam practice (Group 2) to Psychological Stress variables. If t cal > t tab Value, Rejected Ho there is relationship between without Thoppukaranam practice (Group 2) to Psychological Stress variables. Degree of freedom (df) = n-1 So df= 29. Then t table value is29 df = 2.045.

Table 1

Paired Samples T Test For Pre-test and Post-test for Group I

Pre-test and Post-test for Group I					
	Test	Mean	N	Std. Deviation	Std. Error Mean
Stress PSS-10	Pre Test	22.10	30	4.326	.790
	Post Test	18.60	30	2.253	.411

Source: Prepared by Authors (2024)

The analytical tool was used to investigate the experimental Group-I. Table 1 displays the pre-test and post-test outcomes for Brain yoga based on Stress. The 30 participants, mean value, standard deviation, and standard error mean of the results were distributed down as needed.

Table 2

Paired Samples T Test for Pre-test and Post-test for Group I

Paired Sample T Test Differences							
			95% Confidence Interval of the Difference				
Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
3.500	3.472	.634	2.204	4.796	5.522	29	.000

Source: Prepared by Authors (2024)

The analysis tool was used to examine the experimental Group-I. Table-2 Shows that Stress presents the pre-test and post-test value of Thoppukaranam practice. The Mean Value 3.500, Std. Deviation 3.472, Std. Error Mean .634, lower value 2.204 upper value 4.796, t value 5.522, df 29 respectively, resulted in Sig. (2-tailed) of .000, the t calculation value of 5.522 greater than the table value of 2.045. So it's considered statistically significant difference between the pre & post-test means at 0.05 level of confidence for the both test of Stress in Thoppukaranam practice. reveals that the Stress pre-test and post-tests Thoppukaranam had a significant value.

Table 3

Paired Samples T Test For Pre-test and Post-test for Group II

Pre-test and Post-test for Group II					
	Test	Mean	N	Std. Deviation	Std. Error Mean
Stress PSS-10	Pre Test	20.9667	30	2.97673	.54347
	Post Test	21.4333	30	2.81233	.51346

Source: Prepared by Authors (2024)

The analytical tool was used to investigate the experimental Group-II. Table 3 displays the pre-test and post-test outcomes for without Brain yoga based on Stress. The 30 participants, mean value, standard deviation, and standard error mean of the results were distributed down as needed.

Table 4

Paired Samples T Test for Pre-test and Post-test for Group II

Paired Sample T Test Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
-.46667	1.75643	.32068	-1.12253	.18920	-1.455	29	.156

Source: Prepared by Authors (2024)

The analysis tool was used to examine the Control Group. Table-4 Shows that Stress presents the pre-test and post-test value of without Thoppukaranam practice. The Mean Value -.46667, Std. Deviation 1.75643, Std. Error Mean .32068, lower value -1.12253 upper value .18920, t value -1.455, df 29 respectively, resulted in Sig. (2-tailed) of .156, the t calculation value of -1.455 less than the table value of 2.045. So it's considered statistically no significant difference between the pre & post-test means at 0.05 level of confidence for the both test of Stress in Thoppukaranam practice. reveals that the Stress pre-test and post-tests Thoppukaranam had a no significant value.

4 DISCUSSION

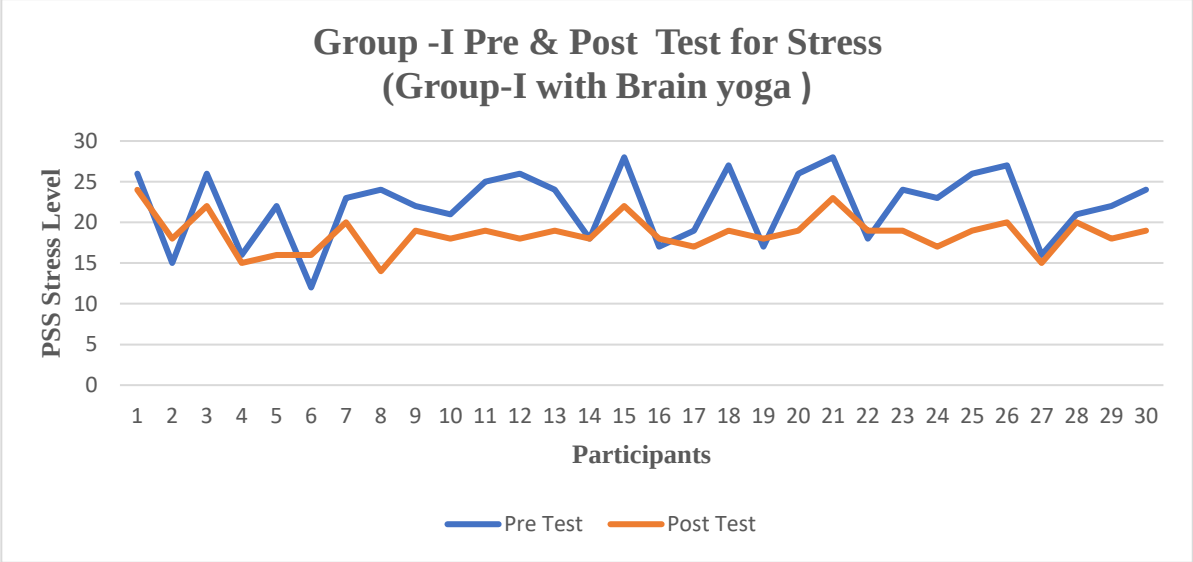
When the baseline characteristics of the two groups were compared, one group showed a significant difference while the other group showed no improvement, therefore they were assessed for the study. Stress levels significantly decreased in the practising Thoppukaranam during the course of the 12-week study. The control group remained unchanged because they didn't have access to Brain yoga. In the yoga groups, we noticed a significant decline in PSS scores. Thus, practising Thoppukaranam allowed Group 1 Participants to experience reduced stress. The reduction in stress may have been influenced by Group 1's improved vagus function. Due to their intellectual background, the yoga group may have performed better on the stress test [29-30].

4.1 GRAPH I PRE-TEST AND POST-TEST FOR GROUP I

According to the graph I analysis, participants in Group -1 Yoga practice module outperformed the Control group. 12 weeks yoga practice has shown to be effective and causes significant Psychologically changes in Stress.

Figure 3

Graph-I Stress Pre& Post-Test with Brain Yoga


Group -I Pre & Post Test for Stress
(Group-I with Brain yoga)
PSS Stress Level
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Participants
Pre Test
Post Test

Source: Prepared by Authors (2024)

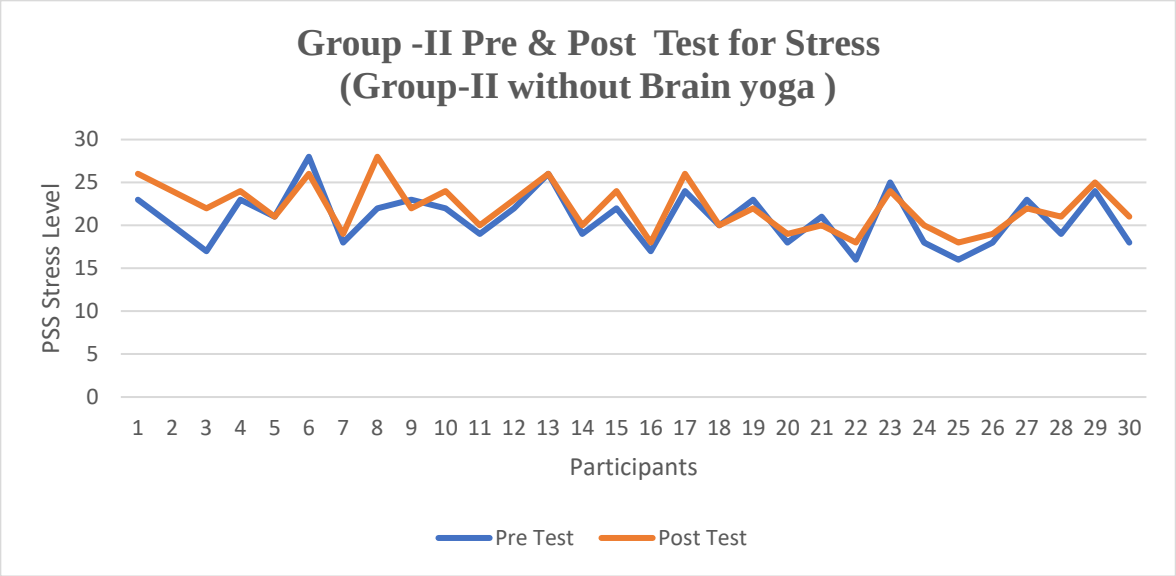
The graph analysis showed that participants in the Group 1 Brain Yoga practise module performed well better than the Control group. Yoga has been proven to be efficient and creates major psychological improvements in stress after 12 weeks of practise. The primary goal of brain yoga is to reduce the psychological effects of stress. Students' evaluations of the advantages of yoga treatment were applied with successful results in experimental group 1 following post-test diagnosis. The 'x' axis of Graph 1 reflected the number of participants (30), and the 'y' axis displayed psychological data, including the Stress PSS level. After the pre-test, the participants received brain exercises including Thoppukaranam. The findings of the Stress Pre-Test were highlighted in blue on graphs with psychological data on the 'y' axis. Results from the stress level post-test showed Orange.

4.2 GRAPH II PRE-TEST AND POST-TEST FOR GROUP II

According to the graph II in Figure 3, participants in Group II's control group did not experience significant improvements. After the pre-test, no practise was given to the participants. There was no discernible difference between the pre- and post-test scores for Stress. The graph demonstrates that there are no effective outcomes.

Figure 4

Graph-II Stress Pre & Post-Test without Brain Yoga


Group -II Pre & Post Test for Stress
(Group-II without Brain yoga)
PSS Stress Level
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Participants
Pre Test
Post Test

Source: Prepared by Authors (2024)

5 CONCLUSION

The Experimental Group I's yoga practise was significantly more successful than the Control Group II's. After doing Brain yoga for 12 weeks, the experimental group shows higher outcome in psychological qualities like Stress. Training of Thoppukaranam help addition to enhanced concentration, memory, and brain function. Exercises in Brain Yoga need constant regulation of the body's functions for precise timing. practising brain yoga helps students cope with scholastic stress by enhancing their hormone balance, cognitive function, and mental stability.

Table 5

Abbreviation and its expansion

Abbreviation	Expansion
PSS	Perceived stress Scale
SPSS	Statistical Package for the Social Sciences
Std. Dev.	Standard Deviation
df	Degree of Freedom
Sig.	Significance
Std. Error Mean	Standard Error Mean
No. of part.	Number of Participants

Source: Prepared by Authors (2024)

AUTHORS' CONTRIBUTIONS

Mr. P. Sudhan conceptualized, designed, performed the experiment, gathered and analyzed the data. Dr. Jahira Parveen investigates the effect of effects of thoppukaranam (Super Brain Yoga) on stress management.

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REFERENCES

1. Chandrasekeran, A., Rajesh, S. K., & Srinivasan, T. M. (2014). Effect of repetitive yogic squats with specific hand position (Thoppukaranam) on selective attention and psychological states. International journal of yoga, 7(1), 76

2. Chandrasekharendra Saraswati,V Krishnamachari(2009) 'Deivathin Kural' meaning Voice of God.

3. https://www.ishtadevata.com/blog/thoppukaranam-super-brain-yoga-related.html.

4. Swami, C. (1987). Glory of Ganesha. Bombay: Central Chinmaya Mission Trust.

5. Keerthiga V, Rajeswari S(2018) Effectiveness of Thoppukaranam on academic performance of school going children in selectedschools at Puducherry.International Journal of Applied Research 2018; 4(10): 276-283.

6. Murat, Z. H., Muhsin, A. F., Kadir, R. S. S. A., & Ahmad, F. H. (2020, December). Intervention of super brain yoga towards brainwave balancing index, brainwave dominance and short term memory. In AIP Conference Proceedings (Vol. 2306, No. 1). AIP Publishing.

7. Viji, V. S., Subbulakshmi, S., & Devi, L. U. (2021). Effect of Super Brain Yoga on Concentration and Memory in Children in a Selected Private School, Kelambakkam, Kanchipuram Dt, Tamilnadu, India. Journal of Pharmaceutical Research International, 33(56A), 141-149.

8. Genovese, J. E., & Little, K. D. (2015). Two studies of Superbrain Yoga's potential effect on academic performance based on the Number Facility Test. Psychology of Consciousness: Theory, Research, and Practice, 2(4), 452.

9. Jois, S., Prasad, N., & D'Souza, L. (2022). Longitudinal Evaluation of Superbrain Yoga Practice on Academic Performance among Adolescents. Health Education and Health Promotion, 10(2), 1-9.

10. Jois, S. N., Prasad, K. N., & D'Souza, L. (2020). Superbrain Yoga Enhances Well-Being among School Students. EXECUTIVE EDITOR, 11(01), 629.

11. Thomas, J. I., & Venkatesh, D. (2017). A comparative study of the effects of superbrain yoga and aerobic exercise on cognitive functions. National Journal of Physiology, Pharmacy and Pharmacology, 7(9), 895.

12. Francis, T., Devi, R. G., & Jyothipriya, A. (2019). Comparative study on the effect of intense exercise and yoga on memory. Drug Invention Today, 12(4), 735-7.

13. Vinu, V., Jois, S. N., Moulya, R., Meena, M., Nagendra Prasad, K., & Dsouza, L. (2022). Longitudinal Evaluation of Superbrain Yoga Practice on Academic Performance among Adolescents. Health Education and Health Promotion, 10(2), 271-276.

14. Haverkamp, B. F., Wiersma, R., Vertessen, K., van Ewijk, H., Oosterlaan, J., & Hartman, E. (2020). Effects of physical activity interventions on cognitive outcomes and academic performance in adolescents and young adults: A meta-analysis. Journal of sports sciences, 38(23), 2637-2660.

15. Premalatha, B. R., Sudhir, J., Hegde, U., Sreeshyla, H. S., Chandavarkar, V., & Mishra, M. N. (2021). Effectiveness of Superbrain Asana on the Academic Performance in Dental Students" An Interventional Study. Journal of Natural Remedies, 291-295.

16. Sudhan, P., & Parveen, S. J. (2024). Effect Of Brain Yoga Practice In The University Academic Students: Optimizing Quality Of Life And Stress Management. Educational Administration: Theory and Practice, 30(3), 458-466.

17. Sudhan, P., Subbiah, B., Rajagopalan, N., Sukumaran, R., Janaki, G., & Ananthan, B. (2023). Effect of Yoga Therapy on Neurological Characteristics in Diabetic Peripheral Neuropathy: Neuro Health Perspective. Journal for ReAttach Therapy and Developmental Diversities, 6(10s (2)), 1071-1078.

18. Teacher, Y., Center, V. Y., & Gnanalayam, A. (2022). Efficacy Of Varma Therapy On Physiological Variables In Male Persons With Diabetic Peripheral Neuropathy (Dpn). Neuroquantology, 20(15), 2693-2703.

19. Sudhan, P., Subbiah, B., Sukumaran, R., Janaki, G., Nagesh, P., & Kalpana, L. Efficacy of Yoga Therapy on Psychological Variables in Male Persons with Diabetic Peripheral Neuropathy (DPN).(2023). Int. J. Life Sci. Pharma Res, 13(1), L230-244.

20. Verma, S., & Kumar, K. (2016). Evidence based study on super brain yoga and its application on alpha EEG in adolescence. Int J Sci Conscious, 2(4), 40-46.

21.Kumar, R., Kalra, S. K., & Mahapatra, A. K. (2008). Lord Ganesha: the idol neurosurgeon. Child's Nervous System, 24, 287-288.

22. Jois, S. N., & D'Souza, L. (2018). The effectiveness of superbrain yoga on concentration, memory and confidence in school students.

23. Sharma, V. K., Elangovan, S. K. S., & Rajendran, R. (2018). Effect of Yoga on Perceived Stress and Reaction Time in Sedentary Males. Int J Physiol, 6(3).

24. Upadhyay, P., Narayanan, S., Khera, T., Kelly, L., Mathur, P. A., Shanker, A., ... & Subramaniam, B. (2022). Perceived Stress, Resilience, and Wellbeing in Seasoned Isha Yoga Practitioners Compared to Matched Controls During the COVID-19 Pandemic. Frontiers in public health, 10.

25. Krishnakumar D, Hamblin MR, Lakshmanan S. Meditation and Yoga can Modulate Brain Mechanisms that affect; 2015.

26.Maric, M., de Haan, E., Hogendoorn, S. M., Wolters, L. H., & Huizenga, H. M. (2015). Evaluating statistical and clinical significance of intervention effects in single-case experimental designs: An SPSS method to analyse univariate data. Behaviour Therapy, 46(2), 230-24.

27. Pallant, J. (2020). SPSS survival manual: A step by step guide to data analysis using IBM SPSS. Routledge.

28. Sudhan, P., & Parveen, S. J. (2022). Effects Of Yoga On Stress Factors Among College Students. Specialusis Ugdymas, 1(43), 4835-4842.

29. Sudhan, P., & Parveen, S. J. (2022)Effect Of Yogic Practices On Selected Psychological Variables Among Academic Anxiety Students. **Seybold report** .DOI 10.17605/OSF.IO/2SCWA

30. Sudhan, P., & Parveen, S. J. (2023). Yogic Varma Techniques: Enhancing Behavioural Control And Reducing Physiological Variables In Special Home Students (Juvenile Offenders). Journal Of Research Administration, 5(2), 5240-5248.